

AL-TR-91-0023

AD-A235 516



ARMSTRONG

**HAZARDOUS WASTE TECHNICAL
ASSISTANCE SURVEY
McChord AFB WA**

DTIC
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APR 30 1991
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Linda B. Albrecht, Captain, USAF, BSC

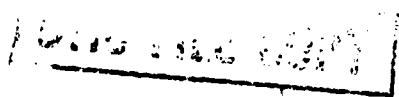
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March 1991

Final Technical Report for Period 22 October 1990 - 26 October 1990

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE March 1991	3. REPORT TYPE AND DATES COVERED Final 22-26 Oct 90		
4. TITLE AND SUBTITLE Hazardous Waste Technical Assistance Survey, McChord AFB WA		5. FUNDING NUMBERS		
6. AUTHOR(S) Linda B. Albrecht, Capt, USAF, BSC				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Armstrong Laboratory Occupational and Environmental Health Directorate Brooks AFB TX 78235-5000 (Formerly: AF Occupational and Environmental Health Laboratory (AFOEHL))		8. PERFORMING ORGANIZATION REPORT NUMBER AL-TR-91- 0023		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Same as Blk 7		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Statement A. Unlimited, approved for public release		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words) At HQ SAC/SGPB request, the AFOEHL conducted a hazardous waste technical assistance survey at McChord AFB from 22-26 Oct 90 which addressed hazardous waste management practices, explored opportunities for waste minimization, and determined waste-streams. Recommendations include: (1) Shops using aircraft soap should switch to a milder soap; (2) Consider using a siliceous-based absorbant; (3) Use a contractor who accepts wet batteries or neutralize the acid; (4) Accumulation point managers should maintain a log; (5) Conduct frequent refresher training; (6) Upgrade accumulation sites; (7) Analyze used paint filters; (8) Dispose of anti-freeze in the sanitary sewer; (9) Sample NDI chemicals to determine if hazardous; (10) Update the Waste Analysis Plan; (11) Find a method to recover solvent from the washrack; (12) Entomology needs to comply with FIFRA; (13) Triple-rinse pesticide containers; (14) List all accumulation sites and managers in the hazardous waste management plan; (15) Use an off-the-shelf filtration unit in the waterfall paint booths; (16) Label all hazardous waste drums; (17) Dispose of waste latex paint as municipe waste; (18) The Auto Hobby Shop should dispose of old hazardous waste drums; and (19) Analyze shop rags from CATM to determine toxicity.				
14. SUBJECT TERMS Waste minimization Albrecht Hazardous waste McChord AFB		15. NUMBER OF PAGES 44		
		16. PRICE CODE		
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

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ACKNOWLEDGMENT

The author greatly appreciates the technical assistance and hard work provided by 1Lt Nancy S. Hedgecock and the personnel at McChord AFB who provided information and logistic support during the survey. Capt Tetla, the Chief of Bioenvironmental Engineering, and the entire staff of Bioenvironmental Engineering Services, USAF Clinic/SGPB at McChord were especially supportive of the mission during the survey.



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I. INTRODUCTION

On 12 January 1990, HQ MAC/LGMWF requested through HQ MAC/SGPB that the Air Force Occupational and Environmental Health Laboratory (AFOEHL) perform a hazardous waste survey at several MAC bases. HQ MAC was particularly concerned with hazardous waste management practices and minimization opportunities at MAC bases.

Capt Albrecht and Lt Hedgecock conducted the hazardous waste survey at McChord AFB from 22 to 26 of October 1990. The scope of this survey was to evaluate hazardous waste management practices from the point of generation to their ultimate disposal. The survey also addressed areas of regulatory compliance, program effectiveness, and waste minimization.

II. BACKGROUND

A. Base Description

McChord AFB, Washington, is located just outside of Tacoma. The base is the home of the Military Airlift Command's (MAC) 62th Airlift Wing.

B. Hazardous Waste Program

The hazardous waste program at McChord AFB is managed primarily by the Environmental and Contract Planning Office in Civil Engineering, 62 ABG/DEEV. This office is also responsible for all waste sampling and hazardous waste determination. Both the Defense Reutilization and Marketing Office (DRMO) at Fort Lewis and the Civil Engineering Squadron are responsible for contractual removal of specific wastes. Bioenvironmental Engineering Services (BES) helps monitor the program through industrial shop surveys.

The individual shops are responsible for identifying, segregating, and handling the wastes generated by their shop. The packaging and labeling is done by the environmental coordinator's office. The wastes are usually placed in a 55-gallon drum located either at a satellite accumulation point or at an accumulation site.

When the wastes require disposal, the generator contacts the hazardous waste technician, Mr Arnold. He completes a DD Form 1348-1 and manifests the waste. The environmental coordinator's office submits the DD Form 1348-1 and the manifest to DRMO when they transport the wastes to DRMO.

The base reclaims and reuses PD-680 within the shops by distillation. Additionally, the shops generating waste oils and fuels collect the used oils and fuels and store them in separate bowzers. When the bowzers are full, they are emptied into separate underground storage tanks. When these tanks are full, the oil is sold to a contractor and the fuel is used at the fire training pit.

NOTE: This report was accomplished by the Air Force Occupational and Environmental Health Laboratory (AFOEHL), which is now the Armstrong Laboratory, Occupational and Environmental Health Directorate.

Both the medical X-ray department and NDI recover silver from used fixer. The fixers are then discharged to the sanitary sewer. The oil and waste fuel are sold to a contractor. Prior to FY 91, the waste fuel was burned in the fire training pit.

All other wastes are disposed of at a cost to the base. Corrosion Control and the Refurbishment Shop accumulate their waste at a central accumulation point. All other waste is stored at satellite accumulation points until the drum is full and the hazardous waste technician transports it to an accumulation point. The hazardous waste technician notifies DRMO when he needs a waste disposal pick-up date. The wastes are brought to DRMO by the generator on that date. A separate contract is used for the waste from the paint booths and wash rack.

Any unknown wastes are analyzed before disposal. The hazardous waste technician has the responsibility to sample unknown wastes and other waste streams on an as needed basis. Samples are sent to a contractor for analysis. Results are sent back to DEEV who then determines proper disposal procedures.

III. PROCEDURE

The first step of the survey was to review the base's hazardous waste management plan and the Bioenvironmental Engineer's industrial shop folders to determine which shops generate chemical wastes. This was followed by visits to 33 shops to observe industrial operations, discuss chemical waste disposal practices with shop personnel, and to hand out chemical disposal survey forms (Appendix B). These forms, which were completed by shop personnel, were reviewed by the survey team and provided additional information for subsequent discussions with shop personnel.

Also, the DRMO Hazardous Waste Storage Facility (HWSF), the satellite accumulation points, and five accumulation sites were visited and evaluated. The accumulation site evaluation form is included as Appendix C. The following individuals were contacted to discuss their responsibility and involvement in the hazardous waste program:

Capt Tetla, Chief, Bioenvironmental Engineering, SGPB

Mr Arnold, Hazardous Waste Technician, DEEV

Mr Grienko, Environmental Coordinator, DEEV

Mr Brown, Defense Reutilization and Marketing Office

Based on the data from the completed chemical disposal survey forms, the annual forecasted quantities for nine categories of waste were determined (see Table 1). From Table 1, column 3, one can see (8.6%) of the waste was waste oils and fluids; however, these wastes were not considered hazardous wastes. Eighty-eight percent of the total amount of waste generated was drummed and disposed of as hazardous waste. From Table 1, column 5, 52.4 of the hazardous wastes generated were rinsewater wastes. Itemized listings of wastes

(including categories, shop, amount of waste, and disposal method) are found in Appendix D. Appendix E lists those wastes disposed of as hazardous waste.

Table 1. Annual Forecasted Quantities for Waste Categories at McChord AFB

PRODUCT	TOTAL (GAL/YR)	% TOTAL	DISPOSED AS HAZ WASTE (GAL/YR)	% TOTAL HAZ WASTE
Oils & Fluids	24988	8.6	0	0
Paints & Thinners	1225	0.4	1025	0.4
Fuels	950	0.3	0	0
Solvents	122581	42.2	120321	46.9
Rinsewater	134410	46.3	134400	52.4
Antifreeze	100	0.03	0	0
Soaps	4202	1.4	0	0
Photo and NDI	1395	.5	255	0.1
Battery Acid	390	.1	390	0.15
Ultraseal	110	.03	0	0
TOTAL: 290351		100	TOTAL: 256391	100

IV. SUMMARY OF WASTE DISPOSAL PRACTICES AT MCCHORD AFB

The waste disposal practices for different categories of waste are summarized in this section. A summary of disposal practices for each waste category is contained in Appendix D.

A. Waste oils and fluids are placed in bowlers or 55-gallon drums and stored at the shops until they're full. The waste oil and fluids are then transferred to a underground waste oil storage tank until the waste oil contractor comes to pump it out. In some cases, small amounts of waste oils and fluids are discharged to oil/water separators that are periodically cleaned out by a contractor. Currently, waste oils and fluids are sold to a private contractor. The payment received is based on demand at the time of disposal.

B. Waste paints and thinners are generally placed in 55-gallon drums and stored at the appropriate accumulation site. These wastestreams are sampled annually by the hazardous waste technician. The drummed waste is transported

to the DRMO storage facility by the hazardous waste technician and stored until a contractor disposes of it as hazardous waste.

C. Rinsewater generated at the washrack is stored in a 7000-gallon tank and disposed of one to two times a week. The contractor pumps the rinsewater into a truck with a 5000-gallon tank capacity. The base pays 31 cents a gallon for disposal of this wastestream.

D. Waste fuel is collected in bowzers or 55-gallon tanks. When these containers are full, the fuel is transferred to an underground storage tank. This fuel was previously used at the fire training pit for training purposes, and is now sold to a contractor.

E. The electrolyte from used lead-acid batteries from vehicle maintenance is drained into 15-gallon plastic drums. The spent electrolyte is collected and disposed of as hazardous waste through DRMO. The acid is not neutralized.

F. Waste solvents (e.g., PD-680) from the maintenance shops are drummed, recycled and reused. This recycled PD-680 is tested to verify the PD-680 meets the mil-spec. Most of the transportation shops have contracts with the Safety Kleen Corporation to service solvent tanks. Safety Kleen drains the used degreasant and refills the units on a schedule for each shop (typically every two months). This eliminates the base's responsibility to purchase and dispose of the degreasant (normally PD-680).

G. Waste fixers are processed through a silver recovery unit located in NDI or medical x-ray before being discharged down the drain to the sanitary sewer. The photo lab's stabilizer is collected and turned into the environmental coordinator's office and taken to DRMO for disposal. All other photo chemicals are discharged down the drain to the sanitary sewer.

H. Waste dye penetrant, emulsifier, developer and magnetic particle solution generated at NDI are drummed and disposed through DRMO. The shop is using hydrophillic solutions.

I. Dirty cleaning rags from most shops are taken to linen exchange and exchanged for clean ones. The rags are sent to a contractor for cleaning.

J. Paint filters from the dry paint booths at the Auto Hobby Shop and Allied Trades are disposed of as municipal waste.

K. Speedy Dry, used to clean up small spills, is usually disposed of as municipal waste. However, a few shops drum it and dispose of the Speedy Dry as hazardous waste.

L. Water from Corrosion Control waterfall paint booths is collected and disposed of as hazardous waste. Approximately every three weeks, 5000 gallons of wastewater is pumped out by the contractor. The contractor also pumps a second Corrosion Control 12000-gallon waterfall paint booth in building 1167 once a month.

M. The Corrosion Control stripping tank is located at the washrack. Rinsewater from washrack paint stripping procedures is drummed and disposed of as hazardous waste.

N. McChord just began collecting empty aerosol cans for disposal as hazardous waste in accordance with Washington State laws.

O. Waste antifreeze is primarily disposed of through the sanitary sewer system. Some shops are collecting antifreeze and attempting to purchase an antifreeze recycling unit.

P. Soaps and cleaning compounds are discharged down the drain either through oil/water separators connected to the sanitary sewer or directly to the sanitary sewer.

Q. Fuel leaked from fuel trucks during maintenance at Refueling Maintenance goes through an oil/water separator into the sanitary sewer. This fuel can't be collected.

V. FINDINGS AND OBSERVATIONS

A. In the past year, PD-680 usage within the Transportation Squadron has almost been eliminated by leasing Safety Kleen degreasing units rather than using PD-680 in tanks. The maintenance squadron is recycling PD-680. Both these changes will save the base substantial amounts of money.

B. The Environmental Coordinator Office (DEEV) is responsible for training accumulation site managers. This is an initial training course.

C. Although Washington State has a new law which requires all aerosol cans to be collected and turned in as hazardous waste, not all shops were aware of this new law. Therefore, some shops were disposing of aerosols as municipal waste.

D. Some accumulation sites are located next to grassy areas. Generally, the storage areas aren't curbed or covered. Waste oil and fluid storage drums and bowers are kept locked with the exception of the bowser at AGE. The shop supervisor or accumulation site manager maintains the key. This prevents accidental or intentional waste cross-contamination.

E. McChord AFB has established a baseline waste characterization for most of the hazardous wastestreams. Most potentially hazardous wastes have been sampled once. This type of program has allowed the base to establish documented rationale for classifying each wastestream as either hazardous or nonhazardous in addition to meeting Resource Conservation and Recovery Act (RCRA) requirements.

F. Each accumulation site and waste oil storage area has a designated primary site manager.

G. All drummed hazardous wastes are stored at accumulation sites or satellite accumulation sites until they are transported to the DRMO storage facility on Fort Lewis. Hazardous waste may be stored at the accumulation sites for up to 90 days or at a satellite accumulation site until 55 gallons of hazardous waste or 1 gallon of acute hazardous waste is accumulated. McChord AFB does not intend to store hazardous waste that doesn't meet these requirements; therefore, McChord AFB will not need a RCRA Part B permit.

H. Some sites, the Auto Hobby Shop and Transportation, had over 55 gallons of waste stored for over 90 days. Therefore, they should no longer be satellite accumulation sites but must be accumulation sites.

I. The Entomology shop had one leaking 55-gallon drum of new material in the herbicide room. The leaking herbicide was being caught in a drip pan. A new tap has been ordered for the drum.

J. Most shops utilize the service of a local linen contractor for cleaning dirty rags.

K. Several hazardous waste drums at both satellite accumulation sites were not labeled or dated.

VI. RECOMMENDATIONS

A. The transportation and maintenance squadrons should use a milder soap rather than aircraft soap for cleaning floors. Aircraft soap will increase the COD level in the sanitary sewer.

B. All shops that use Speedy Dry should consider using an alternate absorbent material such as one that is siliceous-based. This type absorbent material reduces clean up time, requires less absorbent, and reduces quantity of hazardous waste generated. Also, absorbent material used to clean up oil spills is not required to be disposed as hazardous waste. Absorbent material used to clean up fuel spills should be disposed as hazardous waste.

C. DRMO should be contacted to determine if it is possible to find a local contractor who will accept wet lead-acid batteries. This would eliminate the need for neutralizing, sampling, analyzing, and disposing the spent electrolyte. Until such a contract is established, waste lead-acid battery electrolyte from all battery shops should be sampled and analyzed for lead. If the lead concentration is below 5.0 mg/L, the electrolyte should be neutralized and discharged to the sanitary sewer. Even if the heavy metal content is high and the waste is hazardous, it is cheaper to dispose of neutralized acid than a corrosive and toxic waste.

D. Accumulation site managers should document the waste storage container contents in a log. This log should contain: (1) a unique sequence number to identify which wastestream generated the waste (each wastestream in a shop should have a unique number), (2) date, type, and amount of waste put into the drum (see Table 2 for example), (3) start and stop dates of filling each drum, and (4) name and signature of person putting the waste in the container. Also, a uniform system of documentation should be used by all site managers on base. This type of log can provide documented rationale for substituting user's knowledge for analytical results for waste disposal (40 CFR 262.11).

Table 2: Example Hazardous Waste Disposal Log

**PAINT SHOP HAZARDOUS WASTE DISPOSAL
LOG FOR DRUM NUMBER: 1**

Date	Type of Waste	Amount of Waste	Name & Signature
10 Jun 89	Enamel Paint	1 qt	
10 Jun 89	MEK	1 gal	
15 Jul 89	MEK	1 gal	
20 Jun 89	Polyurethane Paint	1 qt	
25 Jun 89	Polyurethane Thinner	1 gal	
30 Jun 89	MEK	10 gal	
5 Jul 89	Enamel Paint	1 qt	
6 Jul 89	MEK	2 gal	
6 Jul 89	Enamel Paint	1 qt	
7 Jul 89	MEK	2 gal	
8 Jul 89	MEK	2 gal	
9 Jul 89	MEK	2 gal	
11 Jul 89	MEK	2 gal	
13 Jul 89	Enamel Paint	1 qt	
13 Jul 89	MEK	2 gal	
14 Jul 89	MEK	2 gal	
16 Jul 89	Enamel Paint	1 qt	
16 Jul 89	MEK	5 gal	
18 Jul 89	Polyurethane Paint	2 qts	
18 Jul 89	Polyurethane Thinner	3 gal	
20 Jul 89	MEK	4 gal	
21 Jul 89	MEK	1 gal	
28 Jul 89	Enamel Paint	1 gal	
28 Jul 89	MEK	7 gal	

TOTAL: 50 gal

Amounts:

MEK	43.00 gal	86.00%
Polyurethane Thinner	4.00 gal	8.00%
Enamel Paint	2.25 gal	4.50%
Polyurethane Paint	0.75 gal	1.50%

E. Although civil engineering has established a training program, the majority of the personnel only received initial training. Therefore, a formalized hazardous waste education and training program should be implemented at McChord AFB. The program should provide opportunities for inputs from the BEE shop on the health hazards associated with hazardous wastes and materials since many shop personnel are physically involved with their handling. Also, DRMO should provide input on the present and future costs to the base for disposing hazardous wastes and the required turn-in procedures. The training class should be given every six months to all shop supervisors and hazardous waste monitors.

F. Although not required by law, it would be advantageous to McChord AFB to upgrade the accumulation sites with, at a minimum, covers, locking fences, and impermeable, diked surfaces. These measures could facilitate spill containment and minimize adverse environmental consequences (e.g., soil and groundwater contamination from leaks and spills).

G. The used paint filters at Allied Trades and Auto Hobby should be analyzed to determine whether or not they are hazardous. If they prove to be nonhazardous, the filters can continue to be disposed as municipal waste.

H. The current practice of storing some ethylene glycol antifreeze for future recycling may be unnecessary since it is readily biodegradable, is diluted during use, and is further diluted in the sanitary sewer system. If the base wishes to recycle the antifreeze, they first need to purchase an antifreeze recycling unit. The units are relatively inexpensive, easy to operate, and will reduce the amount of antifreeze purchased and the disposal costs. However, until the recycling unit is purchased, the antifreeze can go into the sanitary sewer.

I. Spent chemicals from the dye penetrant inspection process and the magnetic inspection process at NDI should be sampled and analyzed to determine which wastes are actually hazardous. If any of the wastes are not hazardous, they can be disposed of down the drain or as waste oil, whichever is applicable.

J. DEEV should update the waste analysis plan. As a minimum, RCRA requires a complete listing of all known wastestreams with a brief description of the process or operation generating the waste; the results of a baseline chemical analysis; the required analysis frequency; the sampling technique; and the analysis parameters. This type of sampling program will allow the base to classify each wastestream as either hazardous or nonhazardous. A good reference on hazardous waste sampling is "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA-600/2-80-018, Jan 1980. Table 3 is an example of a waste analysis plan.

K. The base should further explore the possibility of recovering the solvent used for degreasing at the washrack by vacuuming the solvent from the plane rather than rinsing it with water. This would greatly reduce the amount of hazardous waste generated by the base.

L. The CES Entomology shop is currently not in compliance with FIFRA. The organophosphate storage room should be curbed to contain spills. The shower, washing machine, and dryer should not be located in the chemical mixing room. This minimizes potential worker exposures.

M. CES Entomology should either immediately use the triple-rinse waste for mixing the chemicals, or store it for future use. It should not be discharged to the sanitary sewer. Also, Golf Course Maintenance should triple-rinse the nonpaper pesticide containers.

N. The Hazardous Waste Management Plan should include a complete listing of all hazardous waste accumulation and satellite accumulation sites, clearly distinguishing the site type. The plan should also include a list of all hazardous waste primary and alternate monitors. This is required in 40 CFR

265.52, contingency plan (referenced in 262.34, accumulation time.) "The plan must list names, addresses, and phone numbers of all personnel qualified to act as emergency coordinator." If the environmental coordinator's office wishes to assume this responsibility, they'll need, to be extremely knowledgeable about what is in every drum, where its stored, etc.

O. The analytical laboratory used to perform hazardous waste analysis should be a participant in the EPA Contract Laboratory Program-Special Analytical Services program. This program provides the laboratory with blanks, spikes, and other Quality Assurance/Quality Control procedures. This would help to insure that the laboratory does not provide the base with erroneous analytical results. A good reference is "Contracting of Samples for Chemical Analyses, What You Should Know About It" by Thomas C. Thomas, AFOEHL Report 90-138SA00111GXX Aug 90.

P. Although the base plans to have the Army Corp of Engineers design a filtration system for the waterfall paint booths, several systems are already available. These "off-the shelf" filtration units are cheaper than a new design and have been proven to work. An "off-the-shelf" filtration system should be purchased for the waterfall paint booths. These systems are readily available and will greatly reduce the quantity of hazardous waste generated. This type of system will pay for itself quickly and then save the base money currently spent on hazardous waste disposal costs.

Q. Some of the accumulation site floors should be cleaned (Auto Hobby waste oil tank opening, Flightline Maintenance accumulation site, and Transportation waste oil bowser). These accumulation areas show evidence of several old or continual oil spills.

R. All storage drums located at accumulation sites should be labeled with a "hazardous waste label," the shop name and accumulation start time. Storage drums located at satellite accumulation sites should be labeled with a "hazardous waste label" and the shop name. When 55 gallons of waste are accumulated at a satellite accumulation site, a date must be put on the label and the waste must be removed from the site within three days.

S. The Comm/Nav shop has two flammable cabinets located outside Bldg 1119. The cabinets have "PCB containing" labels on them. These labels should be removed from the cabinets.

T. Waste latex paint is not a hazardous waste. It should be allowed to dry and be disposed as municipal waste.

U. The Auto Hobby Shop has several drums of waste solvent that are at least three years old. This storage is not in compliance with RCRA. These drums should be removed and disposed as soon as possible.

V. Although the state of Washington requires rifle-bore cleaner to be turned in, the shop rags from CATM should be tested to determine if they are hazardous waste.

References

1. Samplers and Sampling Procedures for Hazardous Waste Streams, EPA-600/2-80-018, January 1980.
2. United States Environmental Protection Agency, "Identification and Listing of Hazardous Waste," 40 CFR 261, March 1989.

APPENDIX A
Request Letter

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17 JAN 90

LGMW

Request for Hazardous Waste Technical Assistance Survey

HQ MAC/SGPB *12 JAN 90*
USAF OEHL/ECQ

IN TURN

1. We are extremely interested in having hazardous waste technical surveys accomplished at our MAC bases. Request your assistance in adding the following bases to your survey schedule:

Little Rock AFB AR
Kirtland AFB NM
Andrews AFB MD
Scott AFB IL
McChord AFB WA

2. We appreciate your assistance in this matter. If at all possible, accomplish this survey at Little Rock AFB at your earliest possible convenience.

3. For additional information, feel free to contact our HQ MAC/LGMWF POC SMSgt Annis, AUTOVON 576-3254.

Jt Col Smith

MR: PER TELECON WITH COL MCGHEE/SGPB, WE CAN GET A NO-FEE HAZARDOUS WASTE SURVEY DONE AT OUR BASES.

ID: LTR/SURVEY/ANNIS

COORD: LGMWF - *PLS* - LGMW *SL* - SGPB - DEEV - JAM - *12 JAN 90/JT*

Shawley (P)

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APPENDIX B
Chemical Disposal Survey Form

PLEASE RETURN THIS FORM TO CAPT TETLA AT USAF HOSP/SGPB BY

SHOP:

BLDG:

CONTACT:

AUTOVON:

Please fill out this form as accurately and completely as possible. If you have any questions on filling it out, please call Caot Albrecht at AV 240-3305.

Examples:

	Tank Capacity	Change Out Frequency	Method of Disposal
PD-680 used in tank	60 gal	4/year	55-gal drum

Comments: 1/2 gal of MEK per month is used as a wipe on/wipe off process for parts cleaning. None is disposed of.

OILS & FLUIDS

	Amt of Waste	Disposal Method
Brake Fluid	6 gal	placed in
Transmission Fluid	10 gal	same 600-gal
Hydraulic Fluid	3 gal	bowser
Motor Oil	50 gal	500-gal UGT
Synthetic Oil	8 gal	55-gal drum

QUESTIONS: If question does not apply to this shop put "N/A" beside it.

1. Does this shop have any underground storage tanks? _____

If yes: How many? _____

Capacity? _____

What is stored in the tank? _____

How often is it cleaned out? _____

Has it ever been leak-tested? _____

2. Do the floor drains of the shop lead to an oil/water separator? _____

If yes: How often is it cleaned out? _____

3. Does the shop have any Safety Kleen units? _____

If yes: How many? _____

Tank capacity? _____

How often are they serviced? _____

4. What does the shop do with dirty rags? _____

5. What does the shop do with used "Speedy Dry"? _____

6. Describe shop activities and responsibilities below:

PAINT WASTE AND THINNERS

PAINTS	Amount of Waste generated/month	Disposal Method
Latex		
Polyurathane		
Enamel		
Other		
Comments		

THINNERS (list below)

Comments

STRIPPERS

Name of Stripper	National Stock #	Amount of Waste per Month	OR Tank Size	Change Out Freq

Comments

ACIDS

Name of Acid	Manufacturer	Amount of Waste generated/month	Method of Disposal
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Comments

BATTERIES

Type of Battery	#/Month	Neutralized in Shop or Turned in Wet
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Comments:

SOAPS/CLEANERS

Name of Soap	Dilution Ratio	National Stock#	Amt Used / month	Disposal Method
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Comments

OILS AND FLUIDS

	Amt. of Waste Generated/month	Disposal Method
Brake Fluid		
Transmission Fluid		
Hydraulic Fluid		
Motor Oil		
Synthetic Oil		
Other		
Comments		

SOLVENTS/DEGREASANTS

Name of Chemical	Amt. of Waste OR generated/mo.	Tank Size	Change Out Freq	Disposal Method
Carbon Remover				
PD-680 used in tank				
Pd-680 used on washrack				
Other:				
Comments				

PHOTO CHEMICALS

Name of Chemical	Manufacturer	Amt/mo	OR Tank Size	Change Out freq	Disposal Method

Is the fixer processed through a silver recovery unit before disposal? _____

NDI Chemicals

Name of Chemical	Manufacturer	National Stock #	Tank Size	Change Out Freq	Disposal Method
------------------	--------------	---------------------	--------------	--------------------	--------------------

Emulsifier

Dye Penetrant

Developer

Comments

FUELS

Name of Fuel	Amount/Month	Disposal Method
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ANTIFREEZE

Amount/Month	Disposal Method
--------------	-----------------

OTHER CHEMICALS (Please list any chemicals that contain phenols)

Name of Chemical	Manufacturer	National Stock #	Tank Size	Change Out Freq	Disposal Method
------------------	--------------	---------------------	--------------	--------------------	--------------------

Signature of person filling out this
form _____

APPENDIX C
Accumulation Site Survey Form

HAZARDOUS WASTE ACCUMULATION SITE INSPECTION FORM

LOCATION: _____
ACCUMULATION SITE MANAGER: _____

DATE: _____
PHONE: _____

ITEM	CONDITIONS	STATUS		COMMENTS
		YES	NO	
STORAGE SITE	Secure			
	Gates Locked			
	Warning Signs			
	No smoking			
	Impermeable Floor			
	Diked/Buried			
	Valve in Burm to drain water			
SPILL EQUIPMENT	Empty Overpack Container			
	Materials and Supplies			

ITEM	CONDITIONS	STATUS		COMMENTS
		YES	NO	
FIRE PROTECTION	Extinguisher			
	Funnels in Containers			
STORAGE CONTAINERS	Containers Closed			
	Deteriorating			
	Leaking			
	Spills			

Overall Rating of Accumulation Site: _____

APPENDIX D

Summary of Waste Disposal Practices for Each Waste Category

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Oil

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 CES/Grounds	Oil	60	SBC
62 Trans/Special Purpose	Oil	1320	RTC
62 CSG/Auto Hobby Shop	Oil	20400	RTC
62 EMS/ISODOCKS	Oil	NQ	RTC
62 CES/Pavements	Oil	60	RTC
62 TRANS/Refueling Maint.	Oil	200	RTC
62 CSG/Golf Course Maint.	Oil	120	RTC
62 TRANS/1463L Repair	Oil	110	RTC
62 EMS/Pneumatics	Hydraulic Fluid	260	RTC
62 Trans/General Purpose	Oil	1200	RTC
62 AGS/Test Cell	Oil	208	RTC
62 EMS/Accessory Repair	Oil	1050	SBC
TOTAL:		24988	

WASTE: Fuel

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/Refueling Maint.	Fuel	250	SS
62 EMS/Accessory Repair	Fuel	700	FTP
TOTAL:		950	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Solvents

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/General Purpose	Brake Cleaning Fluid	30	SBC
62 TRANS/1463L Repair	Safety Kleen	60	SBC
62 EMS/Pneumatics	Naptha	330	REC
62 TRANS/General Purpose	Safety Kleen	180	SBC
62 TRANS/Special Purpose	Brake Cleaning Fluid	60	SBC
62 TRANS/Refueling Maint.	Citrikleen	220	SS
62 SPS/CATM	Rifle Bore Cleaner	110	HW
62 EMS/Washrack	Solvent Rinse	120000	HW
62 EMS/Washrack	Stripper	440	SBC
62 AGS/Test Cell	Citrikleen	220	SS
62 EMS/Accessory Repair	PD-680	80	REC
62 TRANS/1463L Repair	Brake Cleaning Fluid	30	SBC
62 EMS/Accessory Repair	Fingerprint Remover	1	HW
62 CSG/Auto Hobby Shop	MC-222380	180	HW
62 EMS/Wheel and Tire	Citrisafe	90	SBC
62 EMS/Accessory Repair	Carbon remover	30	HW
62 EMS/AGE	PD-680	300	REC
62 TRANS/Special Purpose	Safety Kleen	180	SBC
62 EMS/Wheel and Tire	PD-680	40	REC
TOTAL:		122581	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Paint, Sanding Materials, and Thinners

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 CSG/Auto Hobby Shop	Ground Glass	200 lbs	MW
62 EMS/Refurbishment	Paint	330	HW
62 CSG/Auto Hobby Shop	Paint	90	HW
62 EMS/Corrosion Control	Paint	495	HW
62 Trans/Allied Trades	Sand	NQ	MW/SS
62 Trans/Allied Trades	Paint and Thinner	110	HW
TOTAL:		1225	

WASTE: Antifreeze

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/1463L Repair	Antifreeze	NQ	SS
62 CSG/Auto Hobby Shop	Antifreeze	NQ	SS
62 TRANS/General Purpose	Antifreeze	100	SFR
62 TRANS/Special Purpose	Antifreeze	NQ	SS
62 EMS/AGE	Antifreeze	NQ	SS
TOTAL:		100	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: A/C Soap

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/Special Purpose	A/C Soap	220	SS
62 EMS/AGE	A/C Soap	660	SS
62 TRANS/1463L Repair	A/C Soap	330	SS
62 EMS/Washrack	E&E Soap	2860	SS
62 TRANS/General Purpose	A/C Soap	12	SS
62 CES/Power Production	Oil	120	RTC
TOTAL:		4202	

WASTE: Cleaning Rags

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 AGS/Flightline Maint.	Cleaning Rags	NQ	SBC
62 EMS/Corrosion Control	Cleaning Rags	NQ	SBC
62 TRANS/Special Purpose	Cleaning Rags	NQ	SBC
62 EMS/Battery Shop	Cleaning Rags	NQ	MW
62 CSG/Auto Hobby Shop	Cleaning Rags	NQ	MW
62 TRANS/Refueling Maint.	Cleaning Rags	NQ	SBC
62 EMS/Refurbishment	Cleaning Rags	NQ	SBC
62 EMS/ISODOCKS	Cleaning Rags	NQ	SBC
62 AGS/Test Cell	Cleaning Rags	NQ	SBC
62 EMS/Accessory Repair	Cleaning Rags	NQ	SBC
62 SPS/CATM	Cleaning Rags	NQ	MW
62 CES/Entomology	Cleaning Rags	NQ	MW
62 EMS/NDI	Cleaning Rags	NQ	SBC

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Cleaning Rags

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/General Purpose	Cleaning Rags	NQ	SBC
62 EMS/AGE	Cleaning Rags	NQ	SBC
62 EMS/Wheel and Tire	Cleaning Rags	NQ	SBC
62 Trans/1463L Repair	Cleaning Rags	NQ	SBC
TOTAL:		NQ	

WASTE: Speedy Dry

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/General Purpose	Speedy Dry	NQ	MW
62 EMS/ISODOCKS	Speedy Dry	NQ	MW
62 AGS/Flightline Maint	Speedy Dry	NQ	HW
62 EMS/AGE	Speedy Dry	NQ	HW
62 TRANS/1463L Repair	Speedy Dry	NQ	MW
62 TRANS/Special Purpose	Speedy Dry	NQ	MW
TOTAL:		NQ	

WASTE: Rinsewater

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 CSG/Golf Course Maint.	Pesticide Containers	NQ	MW
62 EMS/Corrosion Control	Paint Rinsewater	120000	HW
62 EMS/AGE	Rinsewater	14400	HW
62 CES/Entomology	Pesticide Containers	10	TR/MW
TOTAL:		134410	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Aerosol Cans

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 EMS/ISODOCKS	Aerosol Cans	NQ	HW
62 AGS/Test Cell	Aerosol Cans	NQ	HW
62 EMS/Refurbishment	Aerosol Cans	NQ	HW
62 EMS/AGE	Aerosol Cans	NQ	MW
62 CES/Power Production	Aerosol Cans	NQ	MW
62 TRANS/Refueling Maint.	Aerosol Cans	NQ	MW
62 Trans/Special Purpose	Aerosol Cans	NQ	MW
62 AGS/Flightline Maint.	Aerosol Cans	NQ	MW
TOTAL:		NQ	

WASTE: Photographic and X-Ray Chemicals

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 EMS/NDI	Penetrant	110	HW
62 MSSQ/Base Reproduction	Fixer	180	SRDD
62 EMS/NDI	Mag Particle	15	HW
62 MSSQ/Base Reproduction	Developer	300	SS
62 EMS/NDI	Developer	240	SRDD
62 MSSQ/Base Reproduction	Stabilizer	20	HW
62 EMS/NDI	Fixer	240	SRDD
62 EMS/NDI	Emulsifier	110	HW
USAF Clinic/X-Ray	X-ray Fixer	120	SRDD
USAF Clinic/Dental X-Ray	Fixer	60	SRDD
TOTAL:		1395	

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Battery Acid

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 Trans/General Purpose	Battery Acid	30	HW
62 EMS/Battery Shop	Neut Sulfuric Acid	360	HW
TOTAL:		390	

WASTE: Non-aerosol Cans

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 EMS/AGE	Cans	NQ	RTC
62 TRANS/Refueling Maint.	Cans	NQ	RTC
62 AGS/Flightline Maint.	Cans	NQ	RTC
TOTAL:		NQ	

WASTE: Ultraseal

SHOP	WASTE	QTY(GAL/YR)	DISPOSAL
62 TRANS/Special Purpose	Ultraseal	110	RTC
TOTAL:		110	

APPENDIX E

Summary of Wastes Disposed as Hazardous Waste at McChord AFB

WASTE DRUMMED FOR DISPOSAL AS HAZARDOUS WASTE

Type of Waste: Solvent

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 EMS/Washrack	1178	Solvent Rinse	120000
62 CSG/Auto Hobby Shop	1120	MC-222380	180
62 EMS/Accessory Repair	745	Carbon Remover	30
62 SPS/CATM	1104	Rifle Bore Cleaner	110
62 EMS/Accessory Repair	745	Fingerprint Remover	1
TOTAL			120321

Type of Waste: Paint and Thinner

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 EMS/Refurbishment	Hanger 4	Paint	330
62 Trans/Allied Trades	777	Paint and Thinner	110
62 CSG/Auto Hobby Shop	1120	Paint	90
62 EMS/Corrosion Control	Hanger 2	Paint	495
TOTAL			1025

Type of Waste: Speedy Dry

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 AGS/Flightline Maintenance	0	Speedy Dry	NQ
62 EMS/AGE	1167	Speedy Dry	NQ

Type of Waste: Rinsewater

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 EMS/AGE	1167	Rinsewater	14400
62 EMS/Corrosion Control	Hanger 2	Paint Rinsewater	120000
TOTAL			134400

WASTE DRUMMED FOR DISPOSAL AS HAZARDOUS WASTE

Type of Waste: Aerosol Cans

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 EMS/ISODOCKS	Hanger 1	Aerosol Cans	NQ
62 AGS/Test Cell	792	Aerosol Cans	NQ
62 EMS/Refurbishment	Hanger 4	Aerosol Cans	NQ

Type of Waste: X-ray and Photographic Chemicals

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 EMS/NDI	Hanger 1	Penetrant	110
62 EMS/NDI	Hanger 1	Emulsifier	110
62 MSSQ/Base Reproduction	100	Stabilizer	20
62 EMS/NDI	Hanger 1	Mag Particle	15
TOTAL			255

Type of Waste: Battery Acid

SHOP	BLDG #	PRODUCT	QTY (GAL/YR)
62 Trans/General Purpose	778	Battery Acid	30
62 EMS/Battery Shop	1119	Neutralized Sulfuric Acid	360
TOTAL:			390

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APPENDIX F
Master List of Shops

MASTER LIST OF SHOPS

SHOP	CONTACT	BUILDING	EXTENSION
1. 62 AGS C-141 Flightline	Maj Bollacoccp	1173	3864/ 5230
2. 62 AGS Transient Maintenance	Mr Smith	Hgr 3	5714
3. 62 CES Interior Electric	Mr Gardikis	528	3631
4. 62 CES Exterior Electric	Mr Uselman	528	3631
5. 62 CES Liquid Fuels	Mr Travis	540	3631
6. 62 CES Pavement/Equipment	Mr Page	532	3631
7. 62 CES Entomology	SSgt Moores	532	2001
8. 62 CES Power Production	SSgt Thayer	540	2074
9. 62 CES Steam Plant	Mr Minor	734	2005
10. 62 CES Carpentry	Mr Semarau	540	3631
11. 62 CES Grounds	Mr Butler	532	3631
12. 62 CSG Auto Craft Center	Mr Jones	1120	3440
13. 62 CSG Golf Course Maintenance	Mr Hanson	836	2186
14. 62 EMS Battery Shop	Mr Webb	1119	2323
15. 62 EMS Pneudralics	SSgt Torvik	1119	2815
16. 62 EMS Wheel and Tire	MSgt Hudson	Hgr 2	5355
17. 62 EMS Propulsion Branch	MSgt Ruffing	745	2796
18. 62 EMS Jet Engine Cell	MSgt Lewis	792	5789
19. 62 EMS Jet Engine Accessory Repair	TSgt Megazzini	745	2796
20. 62 EMS Refurbish Shop	Mr Mattingley	Hgr 4	2890
21. 62 EMS Corrosion Control	SMSgt Berggeen	Hgr 2	5375
22. 62 EMS NDI	TSgt Budy	Hgr 1	2954
23. 62 EMS AGE	SSgt Spencer	1167	5475
24. 62 EMS Iso Docks	TSgt Haynes	Hgr 1/2	5196
25. 62 MSSQ Base Reproduction	Mr Foster	100	5542
26. 62 SPS Armory	SSgt Hambrock	108	5142
27. 62 SPS Combat Arms	Sgt Jones	1104	2120
28. 62 SUPS Hazardous Material Storage	MSgt Reitz	569	3551
29. 62 TRANS General Purpose	MSgt Baker	778	2272
30. 62 TRANS 463L Repair	Mr Joseph	724	5483
31. 62 TRANS Minor Maintenance	Mr Thomas	714	5484
32. 62 TRANS Allied Trades	Mr Barker	777	5443
33. 62 TRANS Special Purpose	Mr Bilderback	774	5265
34. 62 TRANS Refueling Maintenance	SSgt Morgan	22	2620
35. USAF CLINIC Laboratory	SSgt Roeske	168	2073
36. USAF CLINIC Medical X-ray	SSgt Roberts	165	2361
37. USAF CLINIC- Dental Laboratory	SSgt Eisemann	527	5723
38. USAF CLINIC - Dental X-ray	MSgt Fanning	527	5505
40. 1178 Washrack	SMSgt Berggeen		

APPENDIX G
Summary of Waste Disposal Practices by Shop

DISPOSAL PRACTICES BY SHOP AT McCHORD AIR FORCE BASE

SHOP: 1463L Repair

Building: 724

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Speedy Dry	NQ	MW
Oil	110	RTC
A/C Soap	330	SS
Safety Kleen	60	SBC
Antifreeze	NQ	SS
Cleaning Rags	NQ	SBC
Brake Cleaning Fluid	30	SBC
TOTAL:	530	

SHOP: 62 AGS/Flightline Maintenance

Building: 0

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Aerosol Cans	NQ	MW
Cleaning Rags	NQ	SBC
Speedy Dry	NQ	HW
Cans	NQ	RTC
TOTAL:	NQ	

LEGEND: HW - Hazardous Waste MW - Municiple waste
 NQ - Not Quantified OWS - Oil/Water Seperator
 REC - Recycled by base RTC - Recycled through contract
 SBC - Serviced by Contractor SFR - Saved for Recycling
 SS - Sanitary Sewer SRDD - Silver Recovered then Down Drain
 TR/MW - Triple Rinsed then municipal waste

DISPOSAL PRACTICES BY SHOP AT McCHORD AIR FORCE BASE

SHOP: 62 AGS/Test Cell Building: 792

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Aerosol Cans	NQ	HW
Oil	208	RTC
Cleaning Rags	NQ	SBC
CitriKleen	220	SS
TOTAL:	428	

SHOP: 62 CES/Entomology Building: 532

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Empty Containers	10	TR/MW
Cleaning Rags	NQ	MW
TOTAL:	10	

SHOP: 62 CES/Grounds Building: 532

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Oil	60	SBC
TOTAL:	60	

SHOP: 62 CES/Pavements Building: 532

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Oil	60	RTC
TOTAL:	60	

DISPOSAL PRACTICES BY SHOP AT McCHORD AIR FORCE BASE

SHOP: 62 CES/Power Production Building: 540

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Aerosol Cans	NQ	MW
Oil	120	RTC
TOTAL:	120	

SHOP: 62 CSG/Auto Hobby Shop Building: 1120

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
MC-222380	180	HW
Ground Glass	200 lbs *	MW
Antifreeze	NQ	SS
Cleaning Rags	NQ	MW
Paint	90	HW
Oil	20400	RTC
TOTAL:	20670	

* This quantity is not included in the total.

SHOP: 62 CSG/Golf Course Maintenance Building: 836

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Empty Pesticide Containers	NQ	MW
Oil	120	RTC
TOTAL:	120	

DISPOSAL PRACTICES BY SHOP AT McCHORD AIR FORCE BASE

SHOP: 62 EMS/AGE

Building: 1167

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	SBC
A/C Soap	660	SS
PD680	300	REC
Antifreeze	NQ	SS
Cans	NQ	RTC
Speedy Dry	NQ	HW
Rinsewater	14400	HW
Aerosol Cans	NQ	MW
TOTAL:	15360	

SHOP: 62 EMS/Accessory Repair

Building: 745

WASTE PRODUCT	QTY(GAL/YR)	DISPOSAL
Cleaning Rags	NQ	SBC
Oil	1050	SBC
Fingerprint Remover	1	HW
Fuel	700	SBC
Carbon Remover	30	HW
FD-680	80	REC
TOTAL:	1861	